**Research in Multiple Sclerosis using Functional Magnetic Resonance Imaging**

Medical College of Wisconsin is presently conducting a fMRI research study to learn more about individuals with Multiple Sclerosis experiencing attentional or working memory difficulties. Cognitive dysfunction occurs in 40-65% of patients with MS. These deficits are characterized by impaired recent memory, sustained attention and concentration, and speed of information processing.

Ritalin® is an FDA approved drug for improving attention function in patients with Attention Deficit and Hyperactivity Disorder and fatigue in patients with narcolepsy. Research also suggests that Ritalin® may also improve cognitive function in patients with MS. Therefore, we are interested in whether Ritalin®, will be successful in alleviating some of the attention and working memory deficits experienced by some MS patients. It is hoped that fMRI will provide doctors with reliable, specific, and sensitive data to identify subtle but meaningful changes in memory functions. fMRI will be used in this study to compare the attention and working memory patterns in patients taking two different dosages of this FDA approved medication.

**Who is eligible to participate in this study?**

Individuals:
- Between 18 and 60 years of age
- Diagnosed with Multiple Sclerosis
- Experiencing more than usual attentional or memory difficulties
- With no past or present neurological disorders (e.g. head trauma, seizures, encephalitis, stroke)
- With no known medical illnesses (e.g. diabetes, uncontrolled hypertension, arthritis)
- With no psychiatric illness
- With no current substance abuse
- Females should NOT be pregnant or nursing

**What is the general procedure of the study?**
- A brief phone screen to determine eligibility
• A screening evaluation with the neurologist, study nurse, neuropsychologist, and the study coordinator to establish a baseline necessary for the other visits. This will take approximately 3 hours.

• 3 additional sessions which include drug administration, cognitive tests, and fMRI evaluations. These sessions will take approximately 3-4 hours.

Other useful information:

What is MRI?
MRI is a diagnostic imaging technology that uses a strong magnet and radiofrequency waves to produce pictures or “images” of your internal organs and structures without exposing you to radiation. In this study, the images are taken of your brain.

What is functional MRI?
Functional MRI is an experimental procedure that is similar to MRI, except that images are acquired at a higher frequency while you perform a memory task in the scanner. The images collected allow researchers to see areas of your brain that were involved while you performed the task.

Who are not suitable to undergo MRI scanning?
Individuals will be unable to undergo the MRI scanning because of obesity (greater than 300 lbs), metallic devices in the body, or claustrophobia.

Will I benefit from participating in the studies?
You will not have any direct clinical benefits from participation in the studies. As neuroimaging sequences used in the studies are based on an experimental protocol, images acquired may not be useful for clinical diagnoses. Participation or non-participation in the studies will not alter, in any way, your clinical care. You will receive a stipend in appreciation for your time in volunteering for this research.

If your are interested and/or would like more information regarding these studies, please call:

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